



Route 28 and Dulles Toll Road/Dulles Greenway Traffic Operations and Safety Study

Executive Summary

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Prepared for



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ES.1 INTRODUCTION

Route 28 and Route 267 (Dulles Toll Road/Dulles Greenway) are busy commuter corridors with operational and safety challenges where they converge, primarily due to heavy commuter traffic during the peak travel periods. The Virginia Department of Transportation (VDOT), in coordination with Fairfax County, Loudoun County, Metropolitan Washington Airport Authority (MWAA), and Toll Road Investors Partnership II (TRIP II, the Dulles Greenway Operator), has initiated this study to develop a master plan to improve traffic operations and safety at the interchange of Route 28 and Route 267 (Dulles Toll Road/Dulles Greenway), as well as the upstream and downstream freeway segments in the study area.

ES.1.1 Project Background and Study Purpose

Over the past several years a number of improvements in the Route 28 corridor and surrounding roadway network have been completed. In August 2017, VDOT completed a project that added one lane to southbound Route 28 from Sterling Boulevard to Route 50 and one lane to northbound Route 28 from McLearen Road to Route 267 (Dulles Toll Road). Additionally, in 2017 the Innovation Avenue Interchange between Route 267 (Dulles Toll Road/Dulles Greenway) and Route 606 (Old Ox Road) opened. While the widening increased capacity of the northbound and southbound Route 28 through movements, the interchange area continues to experience recurring congestion during the weekday morning and afternoon peak periods. Since this project began, two other transportation improvements were completed:

1. Dulles Greenway widening from the main toll plaza to Centreville Road
2. Northbound Route 28 widening from the Dulles Toll Road to Sterling Boulevard

In addition to these roadway changes, land development and traffic continues to grow in areas around the Route 28 corridor in both Fairfax and Loudoun Counties. The extension of the Metrorail Silver Line to points west of the Dulles International Airport in Loudoun County is expected to be completed by 2021. The provision of multi-modal improvements, such as the Silver Line and transit service to the new Metrorail stations, is expected to continue attracting new development to the Dulles Toll Road/Dulles Greenway and Route 28 corridors.

This traffic operations and safety study is needed to address the existing congestion and safety concerns, analyze future changes in roadway conditions, and forecast projected growth in traffic due to evolving land development patterns to develop a long-term master plan. The study results are documented in this report to both inform the Partner Agencies on the outcomes and recommendations of this analysis and to provide a basis for future project development efforts, including: development of phased and affordable improvements that could be programmed and implemented through different funding sources; preparation of an interchange access report (IAR); and production of an environmental decision document based on the National Environmental Policy Act (NEPA).

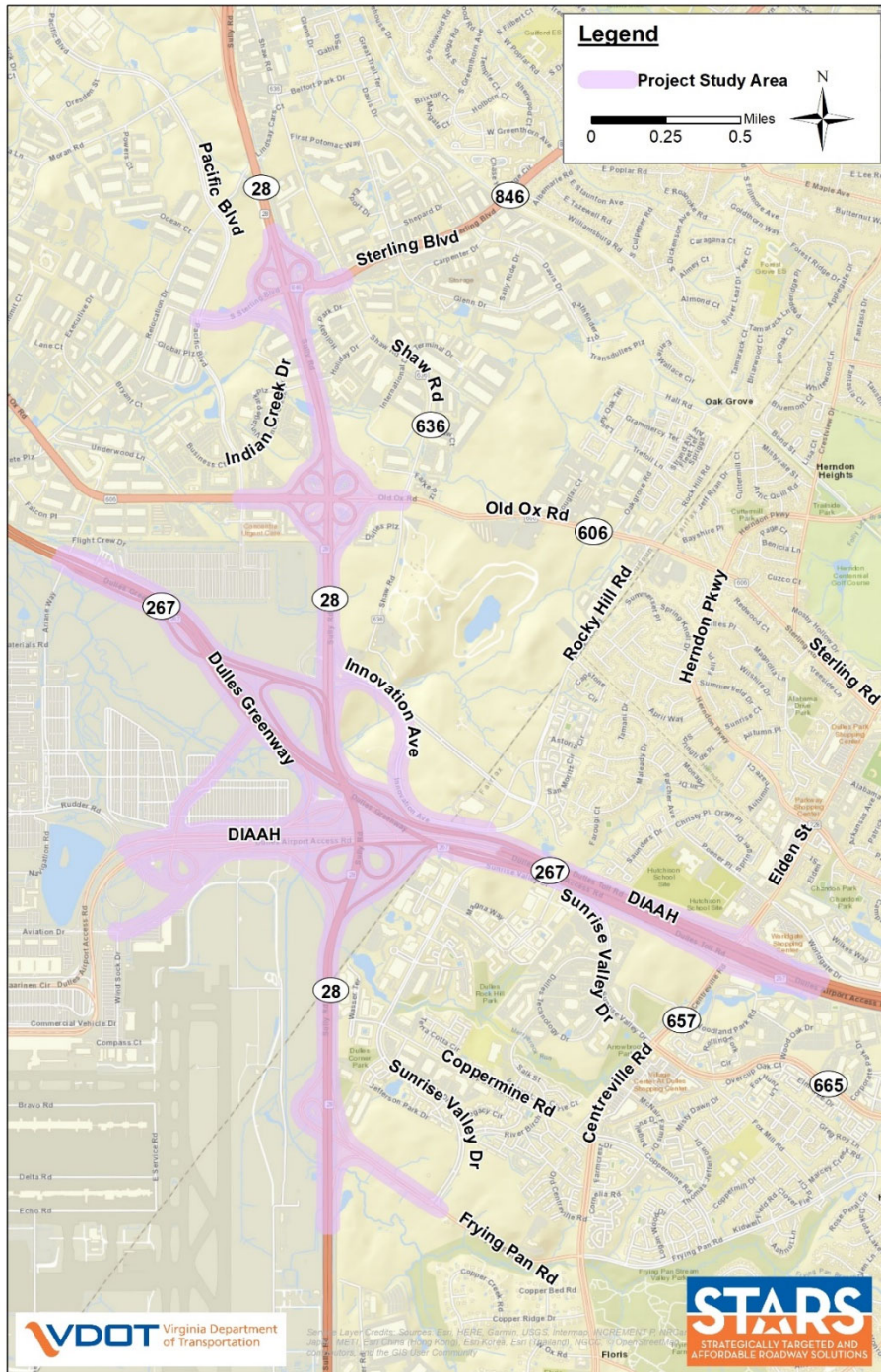
ES.1.2 Study Area

The project study area, as shown in **Figure ES - 1**, is defined as the 3-mile section of Route 28 between Frying Pan Road and Route 846 (Sterling Boulevard); the 2.5-mile section of Route 267 (Dulles Toll Road/Dulles Greenway) between Route 657 (Centreville Road)/Elden Street and Dulles Greenway Main

Toll Plaza west of Route 28; and the 2-mile section of Dulles International Airport Access Highway (DIAAH) between Route 657 (Centreville Road)/Elden Street and Rudder Road.

* Throughout this document, Dulles Toll Road will be referred to as DTR and Dulles International Airport Access Highway as DIAAH.

Figure ES - 1. Project Study Area



ES.1.3 Partner Agency Group

A Partner Agency Group was formed for the Route 28 and Dulles Toll Road/Dulles Greenway Study to capture input throughout the study process to shape the development of improvement concepts. The Partner Agency Group responsibilities include providing institutional knowledge of the corridor, reviewing study methodologies, providing input on key assumptions, reviewing technical analyses and concepts, and reviewing proposed improvements created through the study process. Each agency in the group contributed to funding the study. The Partner Agency Group include members representing the following organizations:

- Virginia Department of Transportation (VDOT)
- Fairfax County Department of Transportation (FCDOT)
- Loudoun County Department of Transportation and Capital Infrastructure (DTCI)
- Metropolitan Washington Airports Authority (MWAA)
- Toll Road Investors Partnership II (TRIP II)

The Town of Herndon also provided input throughout the study process. Seven meetings were held with the Partner Agency Group over the duration of this study.

ES.1.4 Study Methodology and Assumptions

Prior to beginning this study, a framework document was prepared that describes the data collection plan, traffic operations and safety analysis methodology, traffic forecasting methodology, study horizon years, and assumptions regarding land uses and assumed transportation improvements. The Partner Agency Group reviewed and approved the framework document contained in **Appendix A**.

ES.2 EXISTING CONDITIONS

Traffic operational and safety analysis was performed for the assessment of existing conditions. Detailed information on the analysis is included in **Chapter 2** (Existing Conditions).

It should be noted that the COVID-19 pandemic has dramatically impacted travel patterns and traffic volumes since March 2020. However, traffic volumes are anticipated to return to pre-COVID-19 levels by the time any improvements recommended from this project are constructed and operational. VDOT traffic count data from area count stations shows that regional traffic volumes during the PM peak have returned to approximately 85 to 90 percent of pre-COVID volumes, and truck volumes are actually up to 10 percent higher or more than pre-COVID volumes. Given these trends, the project team recommends moving forward with the traffic analysis and forecasts based on counts taken prior to the pandemic.

ES.2.1 Operational Analysis

The operational analysis indicates that during the AM peak period, the most prevalent congestion in the study area is experienced along southbound Route 28 north of the off-ramp to eastbound Route 267 (Dulles Toll Road), along eastbound Route 267 (Dulles Greenway) between the main toll plaza and Centreville Road. In addition, congestion occurs at the northbound and southbound Route 28 ramps to Frying Pan Road. As a result of the AM peak congestion, vehicle queues are present at the following ramp locations:

- Eastbound Route 267 (Dulles Greenway) to Southbound Route 28
- Northbound Route 28 to Eastbound Route 267 (DTR)
- Southbound Route 28 to Eastbound Route 267 (DTR)
- Southbound Route 28 to Frying Pan Road
- Northbound Route 28 to Frying Pan Road

The AM peak period congestion is typically caused by the following factors:

- Eastbound Route 267 (DTR) weaving east of Route 28 due to closely spaced interchanges
- Limited capacity (single lane loop ramp) for the southbound Route 28 ramp to eastbound Route 267 (DTR)
- Southbound Route 28 weaving and ramp movements due to closely spaced interchanges north of Route 267
- Limited capacity and traffic signals along Frying Pan Road

During the PM peak period, the most prevalent congestion in the study area is experienced along northbound Route 28. This congestion also spills back and impacts operations to the westbound Route 267 (DTR) mainline. As a result of the PM peak congestion, vehicle queues are present at the following ramp locations:

- Westbound Route 267 (DTR) to Northbound Route 28
- Frying Pan Road to Northbound Route 28

The PM peak period congestion is typically caused by the following factors:

- Northbound Route 28 weaving and ramp movements due to closely spaced interchanges north of Route 267, especially the left-side northbound off-ramp to Waxpool Road

ES.2.2 Safety Analysis

The safety analysis showed that during the 5-year analysis period, a total of 1,187 crashes occurred within the limits of the study area.

- Rear-end crashes (613 crashes, 59 percent) accounted for the largest percentage of crashes in the study area; fixed-object crashes are the second highest percentage crash type (233 crashes, 22 percent) contributing to more severe crashes.
- Of the total, 272 crashes (23 percent) resulted in an injury and four crashes were fatalities. All four fatalities were from fixed-object crashes.
- A total of 10 crash hot spots were identified for corridor. The frequency and severity of crashes increases near ramp junctions and weaving areas where traffic flow is disrupted, especially in areas where the interchange spacing is frequent and where mainline weaves occur.
- A large percentage of crashes occurred during the AM or PM peak periods (330 crashes, 32 percent and 410 crashes, 39 percent, respectively). The high percentage of AM and PM peak period crashes and the high percentage of rear-end crashes indicate that traffic congestion is likely the highest contributor to the study area crashes.

The documented existing conditions serve as the basis for evaluating future conditions and identifying mitigation measures to address operational and safety challenges in the study area.

ES.3 2025 AND 2045 NO-BUILD CONDITIONS

Future conditions analysis considered future traffic volume growth and patterns, approved land development, and programmed or funded transportation projects for the design years 2025 and 2045. A map showing all programmed or funded transportation projects that are assumed to be complete by 2025 and 2045 is available in **Chapter 4**.

Separate 2025 and 2045 traffic forecasts were developed to reflect anticipated shifts in travel demand associated with capacity or policy changes in each. Traffic operations for the alternative were consistent with analyses performed for the existing conditions analysis.

ES.3.1 2025 No-Build Conditions Traffic Operations

During the 2025 AM peak period, freeway congestion is projected along southbound Route 28 north of the off-ramp to eastbound DTR, and along eastbound DTR east of the weave area where the Dulles Greenway joins the DTR. These are two separate queues with their own underlying causes, and both of these areas of congestion would be worse in the 2025 AM peak period as compared to the Existing AM peak period.

- The projected congestion along southbound Route 28 would be due to increased demand for the loop ramp to eastbound DTR, which is already exceeding capacity under Existing Conditions.
- The congestion anticipated along eastbound DTR would be attributable to downstream congestion outside the study area; weaving within the study area; and the conversion of the left-most lane from HOV-2+ to HOV-3+.

During the PM peak period, freeway congestion would improve under 2025 No-Build conditions due to nearby roadway network improvements (primarily in Loudoun County) that affect regional travel patterns. Along northbound Route 28, queueing and travel times would improve as compared to Existing Conditions due to the widening project (construction of this improvement has been completed).

ES.3.2 2045 No-Build Conditions Traffic Operations

During the 2045 No-Build AM peak period, areas of congestion that are present in existing and 2025 conditions are generally projected to degrade.

During the 2045 No-Build PM peak period, areas of congestion that are present in existing and 2025 conditions are generally anticipated to degrade, while some new areas of congestion are also projected. The most notable areas of future congestion during the PM peak period would include the following:

- Northbound Route 28 north of Route 267: the congestion would return due to higher traffic demand, closely-spaced on-ramps and off-ramps, and weaving associated with the left-side off-ramp to Waxpool Road just north of the study area.
- Westbound Route 267 east of Route 28: congestion would increase due to demand exceeding capacity for the ramp from westbound Route 267 to northbound Route 28, which would queue back onto the westbound Route 267 mainline and would spill back through the Centreville Road interchange and out of the study area network.
- Eastbound DIAAH leaving Dulles International Airport between the on-ramp from southbound Route 28 and the off-ramp to northbound Route 28: conditions would degrade due to projected

heavy ramp volumes (southbound Route 28 to eastbound Dulles Toll Road) exceeding the capacity of this weaving segment.

Several arterial intersections would experience failing conditions and have corresponding vehicle queues that would spill out of the study area network during morning and afternoon peak periods. Demand to the freeway network would be constrained, and the congestion observed along the freeway network would be likely less severe than it would be if demand were unconstrained.

ES.4 ALTERNATIVES DEVELOPMENT AND PREFERRED ALTERNATIVE

ES.4.1 Alternatives Development

Safety, geometric, and operational challenges identified in the existing and forecasted No-Build conditions analyses were used as basis to establish criteria to evaluate potential improvements for the study area. In close coordination with the Partner Agency Group, the project team identified four evaluation criteria to assess improvements. The criteria elements included safety, traffic operations, implementation, and cost.

A project development process was used to identify different improvement alternatives for evaluation. Various input elements were considered, including:

- Concept ideas for the mainline and interchange improvements;
- Testing assumed policy changes related to tolling and high-occupancy vehicle lanes (or HOV);
- Evaluation criteria previously discussed in **Section 5.1**; and
- Input from Partner Agencies.

The analysis results of the three alternatives, which are summarized in **Chapter 6**, were used to identify a recommended preferred alternative.

In collaboration with the Partner Agency Group, the project team developed and screened various improvement concepts. The group achieved consensus on three different improvement alternative packages to advance for evaluation. Each improvement alternative package applied a unique strategy for addressing challenges in the study area.

- **Alternative 1 – Maximizing Existing Infrastructure** – A strategy to maximize existing infrastructure and minimize right-of-way impacts by influencing travel patterns-and-capacity through policy changes.
- **Alternative 2 – Addressing Critical Needs** - A strategy to address challenges by focusing on the study area's most critical safety and operational needs.
- **Alternative 3 – Considering Unconstrained Infrastructure** – A strategy that considers unconstrained infrastructure to address all safety, all operational, and nearly all geometry challenges by adding more roadway connectivity and capacity.
- **Alternative 3 (Option B) – Considering Unconstrained Infrastructure with Additional Connections** – A strategy similar to Alternative 3 with two geometric exceptions, which includes a connection between Davis Drive and Centreville Road. This additional alternative was included for analysis at the request of Fairfax County.

Each alternative was analyzed using the same methodology and tools outlined for existing and No-Build conditions. Results for each Build Alternative are summarized in **Chapter 6. Table 7-1** outlines improvement details, summary of benefits, right-of-way impacts, and estimated cost for each Build Alternative.

ES.4.2 Preferred Alternative

The project team used results from each improvement alternative analysis and combined elements that performed well to select an overall recommended Preferred Alternative. Partner Agencies reviewed and vetted the recommended Preferred Alternative described in **Chapter 7.0**. The team presented the recommendation to the public in a virtual public information in Summer 2020. Feedback from the public outreach as well as further technical review was used to refine the recommended preferred alternative.

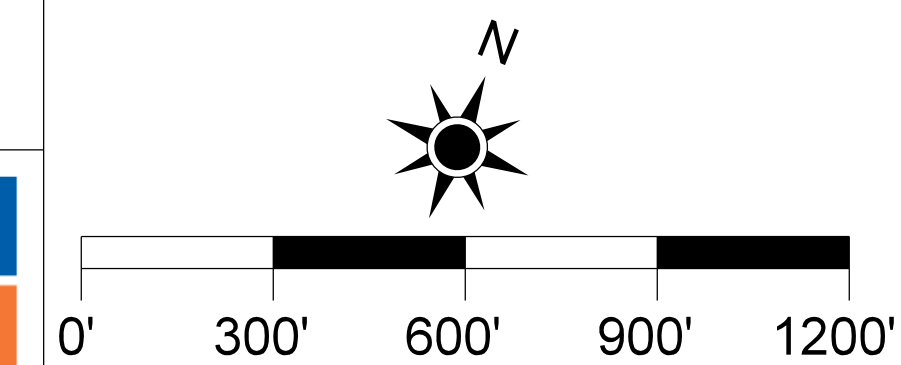
Some key elements of the Preferred Alternative are:

- Toll Policy changes – implementing distance-based tolling along the Dulles Greenway and increasing peak period tolling in peak direction along the Dulles Toll Road
- Technology, cameras, and dynamic message signs for traffic monitoring and management
- New southbound Route 28 to eastbound Dulles Toll Road flyover ramp
- Route 28 collector-distributor roads, ramp braiding, and other ramp improvements in the northbound and southbound directions, from south of the Dulles Toll Road to Route 606
- Eastbound Dulles Toll Road widening to Fairfax County Parkway interchange
- Conversion of the Route 28 and Route 606 interchange to a diverging diamond interchange
- Conversion of the Dulles Toll Road and Centreville Road interchange to a diverging diamond interchange
- Interchange improvements at Route 28 and Frying Pan Road
- Pacific Boulevard extension from Route 606 to Innovation Avenue

Based on the preliminary concept development, the Preferred Alternative cost estimate is approximately \$400 Million and has an estimated right of way impact of 30 acres (22 acres within the Dulles Airport property). As part of the concept design for the Preferred Alternative, several design considerations are outlined in **Section 7.6. Figure ES-2** is a graphic of the overall recommended Preferred Alternative.

FIGURE ES-2. PREFERRED ALTERNATIVE

ROUTE 28 & DULLES TOLL ROAD/ DULLES GREENWAY STUDY



LEGEND

- PARCEL/PROPERTY/VDOT EASEMENT LINE
- LOUDOUN COUNTY/FAIRFAX COUNTY LINE
- RECENTLY COMPLETED WIDENING PROJECT
- PLANNED ROADWAY/PATH (CLRP OR DEVELOPER COMMITTED)
- PROPOSED TRAVEL LANE & FLOW DIRECTION
- PROPOSED PEDESTRIAN FACILITY
- PROPOSED STRUCTURES
- EXISTING STRUCTURES (TO REMAIN)
- X RAMP TO BE CLOSED
- NEW ELECTRONIC TOLLING LOCATION
- 🚦 PROPOSED TRAFFIC SIGNAL (BY PROJECT)
- 🚦 EXISTING TRAFFIC SIGNAL
- 🚦 PLANNED/FUTURE TRAFFIC SIGNAL (BY OTHERS)
- APPROXIMATE PROPOSED RIGHT-OF-WAY LINE

NOTE: NO PROPOSED IMPROVEMENTS TO STERLING BLVD INTERCHANGE

NOTE: OLD OX ROAD (ROUTE 606) PROFFERED TO BE WIDENED TO 6 LANES PER PROJECT CPAP-2019-0002

ADDITIONAL POLICIES INCLUDED IN PREFERRED ALTERNATIVE

- (a) ADD DISTANCE-BASED TOLLING ON THE DULLES GREENWAY
- (b) INCREASE PEAK PERIOD TOLLING IN PEAK DIRECTION ONLY ON DULLES TOLL ROAD
- (c) ADD TECHNOLOGY, CAMERAS, AND DYNAMIC MESSAGES SIGNS FOR TRAFFIC MONITORING MANAGEMENT

NOTE: NORTHBOUND OFF-RAMP TO FRYING PAN ROAD LENGTHENED TO MCLEAREN ROAD PER VDOT ROUTE 28 (AREA 4) WIDENING PROJECT

NOTE: PROPOSED 5th EASTBOUND LANE CONTINUES TO FAIRFAX COUNTY PARKWAY

Disclaimer
 *These conceptual designs are based on the GIS information available at the time they were developed. These plans are unfinished and unapproved and are not to be used for any type of construction or the acquisition of right-of-way. Preliminary right-of-way lines are approximate only and subject to change as project design progresses. Additional permanent easements for utility relocations, drainage, stormwater management, traffic signals and other permanent features may be required beyond the proposed right-of-way shown on these plans. Temporary Construction Easement may also be required for construction.

ES.4.3 2045 Analysis of Preferred Alternative

The Preferred Alternative will provide the following safety benefits:

- 20% reduction in equivalent property damage only (EPDO) crashes per year reduction from existing to future conditions
- Removal of six mainline weaving areas
- Removal of two left merges along the eastbound Dulles Toll Road from the Dulles International Airport Access Highway

The benefits to the traffic operations for the Preferred Alternative was determined through an updated traffic analysis consistent with the existing and No-Build conditions analysis.

Key take-aways from the 2045 AM peak period operational analysis include:

- **Southbound Route 28** – Much of the projected mainline congestion along southbound Route 28 would be mitigated due to the new high-capacity flyover ramp to the airport and eastbound DTR, as well as shifts in travel demand due to toll policy changes.
- **Northbound Route 28** – South of Frying Pan Road, congestion would be anticipated due to the HOV-3 restriction in the left-most lane, limiting capacity in the remaining general-purpose lanes. A projected increase in future demand on the off-ramp to Frying Pan Road would be attributable to the peak-period toll increase along the eastbound DTR.
- **Eastbound Route 267 (Dulles Greenway/DTR)** – In the Preferred Alternative, congestion would still be present along the eastbound mainline due to downstream conditions; however, travel time and throughput is improved due to the additional fifth lane provided between the off-ramp to Centreville Road and the off-ramp to Fairfax County Parkway.

Key take-aways from the 2045 PM peak period operational analysis include:

- **Northbound Route 28** – The upstream improvements to interchange access along Route 28, combined with the travel demand shifts due to toll policy changes, would generally reduce the severity of the congestion spilling back from Waxpool Road and provide operational benefits.
- **Westbound Route 267 (Dulles Greenway/DTR)** – Operations are generally projected to be at free flow speeds.

Based on the results of the analysis, there would be some remaining congestion due to network challenges outside of the study area. As future design phases proceed, the traffic operational analyses should consider these downstream areas as part of additional analyses and studies, especially at the following locations:

- Eastbound Dulles Toll Road to the Fairfax County Parkway interchange and beyond
- Northbound Route 28 to the Waxpool Road interchange

ES.5 PRIORITIZATION OF IMPROVEMENTS

ES.5.1 Prioritization Approach

Due to the scale and size of the interchange improvements identified, it is likely that the Preferred Alternative would be delivered through individual project improvements. In coordination with the Partner Agency Group, the project team reviewed the various elements of the Preferred Alternative to identify prioritization strategy. At this time, no funding has been identified; therefore, VDOT developed this proposed prioritization to advance projects as soon as funding becomes available. This “build up” of project improvements provides a continuous pipeline of projects prepared for implementation.

The prioritization of the Preferred Alternative was based on the following methodology:

- **Near-Term Improvements (less than 6 years):**
 - Focus on the most urgent existing and 2025 safety and operational needs:
 - Identifying opportunities for quicker and lower cost implementation projects
- **Mid-Term (6 to 15 years) and Long-Term Improvements (more than 15 years):**
 - Considering timing of programmed/funded projects
 - Loudoun and Fairfax County do not anticipate significant new development along the north side of the future Metrorail station (Innovation North, Center for Innovative Technology campus area) until after 2025

ES.5.2 Improvement Projects

Using this methodology, the prioritization is summarized below and shown in **Figure ES-3**. Single-page project summary sheets of three near-term improvements are included in **Appendix S**.

Near-Term Improvements (less than 6 years) (highlighted in red on the graphic)

1. Implement Toll Policy changes (distance-based tolling) along Dulles Greenway
2. Implement Toll Policy changes (increase peak period tolling in peak direction) along Dulles Toll Road
3. Add technology, cameras, and DMS for traffic monitoring and management along Route 28 between Frying Pan Road and Sterling Boulevard
4. Add 5th eastbound Dulles Toll Road lane from Centreville Road to Fairfax County Parkway
5. Extend 4th lane along westbound Dulles Toll Road from Dulles Airport exit to just before the Route 28 bridge
6. Add southbound Route 28 to eastbound Dulles Toll Road flyover ramp and associated improvements as noted below (to address resulting weaving, access, and ramp spacing issues):
 - A. Convert the Route 28/Route 606 interchange to a diverging diamond interchange
 - B. Add southbound Route 28 collector-distributor road and ramp braiding
 - C. Extend Pacific Boulevard from Route 606 to Innovation Avenue and add a new signalized intersection to provide access to replace existing Innovation interchange ramps
 - D. Remove existing southbound Route 28 to eastbound Dulles Toll Road loop ramp
 - E. Widen eastbound Dulles Greenway from new southbound Route 28 flyover to merge with Dulles Toll Road
 - F. Remove Dulles Toll Road Main Toll Plaza and replace with ETC on the Route 28 ramps

Mid-Term Improvements (6 to 15 years) (highlighted in green on the graphic)

7. Route 28/Frying Pan Road interchange – extend southbound Route 28 acceleration lane
8. Add northbound Route 28 collector-distributor road and associated ramp connections
9. Add ramp braiding between westbound Dulles Toll Road to northbound Route 28 ramp and new collector-distributor road

Long-Term Improvements (more than 15 years) (highlighted in brown on the graphic)

10. Convert the Dulles Toll Road/Centreville Road interchange to a Diverging Diamond Interchange

ES.5.3 Project Advancement

This study should be used as a planning tool to achieve the next steps for planning, programming, design, and construction of the recommended safety and operational improvements in the study corridor. The highest priority projects should be advanced to the following documents in preparation for funding application submissions.

- Constrained Long Range Transportation Plan (CLRP)
- Transportation Improvement Plan (TIP)
- Statewide Transportation Improvement Plan (STIP)
- VTrans 2045

The Partner Agencies should also explore Third-party Agreements and potential public/private partnership (P3) opportunities to determine the most appropriate and efficient delivery method.

Potential funding sources that may be considered to pursue funding for improvement projects include:

- SMART SCALE
- Northern Virginia Transportation Authority (NVTA) funding
- Local Funding by Fairfax County or Loudoun County
- Funding by Partner Agencies/Operators (MWAA or TRIP II)
- Revenue Sharing
- Congestion Mitigation and Air Quality (CMAQ)
- Highway Safety Improvement Program (HSIP)

The study results are documented in this report to both inform the Partner Agencies on the outcomes and recommendations of this analysis and to provide a basis for future project development efforts, including: development of phased and affordable improvements that could be programmed and implemented through different funding sources; preparation of an interchange access report (IAR); and production of an environmental decision document based on the National Environmental Policy Act (NEPA).

FIGURE ES-3. PROJECT PRIORITIZATION

LEGEND

- PARCEL/PROPERTY/VDOT EASEMENT LINE
- LOUDOUN COUNTY/FAIRFAX COUNTY LINE
- RECENTLY COMPLETED WIDENING PROJECT
- PLANNED ROADWAY/PATH (CLRP OR DEVELOPER COMMITTED)
- PROPOSED IMPROVEMENT
- PROPOSED TRAVEL LANE & FLOW DIRECTION
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- (c) ADD TECHNOLOGY, CAMERAS, AND DYNAMIC MESSAGES SIGNS FOR TRAFFIC MONITORING MANAGEMENT

Convert Dulles Toll Road Main Toll Plaza to Electronic Tolls only (and other toll plazas as feasible)

NOTE: NORTHBOUND OFF-RAMP TO FRYING PAN ROAD LENGTHENED TO MCLEAREN ROAD PER VDOT ROUTE 28 (AREA 4) WIDENING PROJECT

NOTE: PROPOSED 5th EASTBOUND LANE CONTINUES TO FAIRFAX COUNTY PARKWAY

Legend:

- Near-Term
- Mid-Term
- Long-Term

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*These conceptual designs are based on the GIS information available at the time they were developed. These plans are unfinished and unapproved and are not to be used for any type of construction or the acquisition of right-of-way. Preliminary right-of-way lines are approximate only and subject to change as project design progresses. Additional permanent easements for utility relocations, drainage, stormwater management, traffic signals and other permanent features may be required beyond the proposed right-of-way shown on these plans. Temporary Construction Easement may also be required for construction.